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1 Ownership types for safe region-based memory management in real-time Java Chandrasekhar Boyapati, Alexandru Salcianu, William Beebee, Martin Rinard May 2003 ACM SIGPLAN Notices, Proceedings of the ACM SIGPLAN 2003 conference on Programming language design and implementation, Volume 38 Issue 5

Full text available: pdf(375.18 KB)

Additional Information: full citation, abstract, references, citings, index terms

The Real Time Specification for Java (RTSJ) allows a program to create real-time threads with hard real-time constraints. Real-time threads use region-based memory management to avoid unbounded pauses caused by interference from the garbage collector. The RTSJ uses runtime checks to ensure that deleting a region does not create dangling references and that real-time threads do not access references to objects allocated in the garbagecollected heap. This paper presents a static type system that ...

**Keywords**: encapsulation, ownership types, real-time, regions

Error-free garbage collection traces: how to cheat and not get caught Matthew Hertz, Stephen M Blackburn, J Eliot B Moss, Kathryn S. McKinley, Darko Stefanović June 2002 ACM SIGMETRICS Performance Evaluation Review, Proceedings of the 2002 ACM SIGMETRICS international conference on Measurement and modeling of computer systems, Volume 30 Issue 1

Full text available: pdf(105.06 KB) Additional Information: full citation, abstract, references, citings

Programmers are writing a large and rapidly growing number of programs in objectoriented languages such as Java that require garbage collection (GC). To explore the design and evaluation of GC algorithms quickly, researchers are using simulation based on traces of object allocation and lifetime behavior. The

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The Billing Gateway (BGw) is a large multithreaded object oriented C++ appli running on Sun Solaris. Due to frequent allocation and deallocation of dynami memory, the initial implementation of this system suffered from poor perform when executed on a multiprocessor. We compare two approaches for improvin performance of BGw. First we replace the standard Solaris heap with a paralle heap. In the second approach we optimize the application code by removing a number of heap allocations/deallocations. In order to do this, we introduce m pools for commonly used object types and replace some heap variables with s variables. The parallel heap approach resulted in a dramatic speedup improve The optimization of the application code did also result in a dramatic speedup improvement. For this approach the performance using a single processor computer was also increased by a factor of eight. The optimizations took approximately one week to implement

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